



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/864,070	05/22/2001	Nigel Sammes	2354/114	1011

2101 7590 01/14/2005

BROMBERG & SUNSTEIN LLP
125 SUMMER STREET
BOSTON, MA 02110-1618

EXAMINER

MARTIN, ANGELA J

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/864,070

Applicant(s)

SAMMES ET AL.

Examiner

Angela J. Martin

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13,16,18,27 and 29-91 is/are pending in the application.
- 4a) Of the above claim(s) 55-86 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13,16,18,27,29-43,48-54 and 87-91 is/are rejected.
- 7) ☒ Claim(s) 44-47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This Office Action is responsive to the Amendment filed on October 12, 2004.

The Applicant has amended claims 1-13, 16, 18, 27, 29-32, 36, 37; canceled claims 14, 15, 19-26, 28; withdrawn claims 55-86; and added new claims 87-91. However, the pending claims are rejected for the following reasons of record.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 32-35, 39-43, 48-52 are rejected under 35 U.S.C. 102(a) as being anticipated by Kato et al., Electrotech. Lab.

Rejection of claims 32-35, 39-43, 48-52 drawn to a tubular solid oxide fuel cell.

Kato et al., teach a tubular solid oxide fuel cell comprising a tubular anode capable of supporting the fuel cell, an electrolyte disposed on a surface of the tubular anode, and a cathode disposed on the electrolyte (p. 554, para. 2). It teaches the anode comprises a mixture of stabilized zirconia and nickel oxide (p. 554, last para.). In addition, it teaches the electrolyte comprises stabilized zirconia (p. 554, last para.). It teaches the cathode comprises a strontia-doped lanthanum manganite (p. 554, para. 3). It also teaches the anode has a thickness in the range of 300-400 um (p. 557, Table 3). In addition, it teaches the anode comprises a catalyst of CeO₂I (p. 554, para. 2). It

Art Unit: 1745

teaches CeO₂ in a proportion of 1-3% by weight (p. 556, Table 2). It also teaches the anode has a volume percentage of nickel of between 40-50% (p. 556, Table 2). In addition, it teaches more than one anode layer, each layer having a different composition (p. 554, last para.). It teaches the more than one anode layers comprise a thicker support layer and a thinner active layer, the support layer being in contact with a fuel gas (Fig. 4). Additionally, it teaches the support layer comprises a higher ratio of stabilized zirconia to nickel than the active layer (p. 557, Table 3). It teaches the support layer comprises from 0-50% nickel by volume (p. 556, Table 2). It also teaches the active layer comprises an embedded current-collecting wire (p. 554, last para.).

Thus, the claims are anticipated.

3. Claims 1-13, 16, 18, 27, 30, 31, 87, 91 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kato et al., Electrotech. Lab..

Kato et al., teach a fuel cell. [E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

However, if the claims are not anticipated, in the alternative, they are obvious because Kato teaches a tubular solid oxide fuel cell as described in claim 32.

Art Unit: 1745

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 29, 32, 36-38, 53, 54, 88-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al., Electrotech. Lab., in view of Stover et al., Electrochem. Society Proceedings.

Kato et al., teach a tubular solid oxide fuel cell as described above.

Kato et al., do not teach the cathode comprises at least cobaltate or gadnolium; cathode comprises more than one layer, each layer having a different composition; thickness of the anode; two cathode layers; more than two cathode layers; the composition of the two cathode layers.

Stover et al., teach the cathode comprises at least cobaltate (p. 813, para. 1) or gadnolium (p. 816, para 2); cathode comprises more than one layer, each layer having a different composition (p. 813, Table 1); thickness of the anode (p. 813, Table 1); two cathode layers (p. 813, Table 1); more than two cathode layers (p. 813, Table 1); the composition of the two cathode layers (p. 812, Fig. 1; p. 813, Table 1). It teaches the support layer comprises aluminum oxide (p. 813, para. 1).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Stover et al., into the teachings of Kato et al., because Stover et al., teach a fuel cell having more than one cathode layer, which

Art Unit: 1745

optimizes the cathode materials and increases the catalytic activity of the cathode (p. 815, last para.). The extruded tube having a non-circular cross-section would be a design choice of the artisan, depending on the shape of the holding device of the tube.

Allowable Subject Matter

6. Claims 44-47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The Applicant claims a fuel cell according to claim 43, wherein each of the anode layers comprises a ratio of electrochemical active substance to electrolyte substance, and wherein such ratios are higher for layers layered further from a surface of the anode that contacts a fuel gas than for layers that are layered closer to the fuel gas.

The prior art of record, taken either alone or in combination, fails to disclose or render obvious the above described claim limitation of claim 44.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is 571-272-1288. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:00 pm.

Art Unit: 1745

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AJM